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NOTES ON NEW AND INTERESTING GREENLAND LICHENS WITH PARTICULAR EMPHASIS ON HIGH ARCTIC TAXA

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Abstract

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The paper lists 73 taxa of Greenland lichens. *Immersaria athroocarpa*, *Melanelixia subaurifera* and *Polyblastia sakkobanensis* are recorded for the first time from Greenland. *Melanelia agnata*, *Melanohalea exasperatula* and *Peltigera britannica* are new to South Greenland, while *Miriquidica intrudens* and *Peltigera ponojensis* are new to Central West Greenland. *Caloplaca citrina*, *Cladonia galindezii*, *Pertusaria bryontha*, *Protoblastenia rupestris*, *Sphaerophorus globosus* and *Staurothele drummondii* represent northern range extensions in North East Greenland. New localities north of 80° N are given for 59 lichen taxa from Greenland.

Keywords: lichens, polar desert, high arctic, Greenland.

INTRODUCTION

The extensive polar desert north of 80° N belongs to the poorest known areas in Greenland as regards the lichens. The Swedish botanist Th. Wulff collected 64 lichen taxa at c. 83° N during the second Thule expedition in 1916–1918 (Lynge, 1923). K. Holmen collected numerous lichens during the first Peary Land expedition 1947–1950 (Holmen, 1957). Apart from some lichens listed by Andersen & Dietz (1984), this material, which is deposited at the Herbarium C, is still unpublished, but the author found a great part of K. Holmen´s lichens during a trip to Peary Land in the summer of 1988 (Hansen, 1995). The author undertook lichenological exploration in the areas situated north of 80° N in 1995, 1999 and 2007 (Alstrup et al., 2000; Hansen, 2001, 2009). The British physician R. Corner collected c. 40 lichen species in northern Peary Land in 1995 (Hansen, 2008). Distribution maps including Greenland lichen material from localities situated north of 80° N can be consulted in works such as Thomson (1984, 1997), Moberg & Hansen (1986), Hansen et al. (1987), Breuss & Hansen (1988), Timdal (1991), Hansen & Obermayer (1999) and Hansen & McCune (2010). From these maps it is evident that many parts of this huge area are still in need of lichenological investigation. Together with a few additional lichens from southern localities, these northern collections constitute the basis of the present paper. The new species *Buellia mogensenii* from Kap København has been published separately (Hansen, 2012). The increasing borealization of the arctic lichen communities caused by global warming is expected to change the northern range extensions for some species. Therefore, the aim of the present paper is to stimulate the future lichen research in this high arctic region.

MATERIALS AND METHODS

The present paper is based on the collections made up by C. Bay, O. Bennike, E. Dahl, B. Fred-

skild, S. Funder, P. Gelting, K. Hansen, G. Mogensen, P. Mølgaard, J. Vahl and the author in different parts of Greenland, but in particular areas situated north of 80° N. Numerous sites were visited by the collectors (the coordinates of the sites and collecting dates are given in the list of lichens together with notes on the substrate and associated lichens). All specimens except those belonging to the *Immersaria, Melanelia, Melanelixia, Melanohalea, Miriquidica* and *Polyblastia* genera, were identified by the author. The investigation area is located in the high arctic, continental zone characterized by low summer temperatures and low annual precipitation (Mølgaard, 1982; Jensen, 1999). Bay (1992, 1997) has previously given a detailed account of the floristic and ecological conditions of the polar desert zone. A total of 160 lichen specimens were studied using Zeiss light microscopes and identified by the author (a few specimens were identified by other lichenologists as stated in the list of species). The nomenclature in the list follows Santesson et al. (2004) when appropriate. The specimens are deposited at the Botanical Museum of the University of Copenhagen (C).

RESULTS AND DISCUSSION

List of species

New species to Greenland are marked with #. Species that represent northern range extensions in North East Greenland are marked with an asterisk (*). Species new to South Greenland are marked with two asterisks (**), and species new to Central West Greenland are marked with three asterisks (***).

Aspicilia candida (Anzi) Hue – Holm Land, 80° 20′ N, 18° 45′ W – on siliceous stone together with *Sporastatia testudinea* and *Xanthoria elegans*, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49′ N, 17° 35′ W – on siliceous stone together with *Staurothele drummondii* and *Xanthoria elegans*, leg. B. Fredskild, 25 July 1993; Kim Fjelde, 82° 41′ N, 22° 30′ W, alt. 100 m – on calcareous stone on polygon soil, leg. P. Mølgaard, 29 June 1978.

Brodoa oroarctica (Krog) Goward – Station Nord, Knuth Fjeld, 81° 36′ N, 17° 00′ W – on siliceous stone together with *Umbilicaria lyngei*, leg. P. Mølgaard, 19 August 1978.

Bryocaulon divergens (Ach.) Kärnefelt – Kim Fjelde, 82° 31′ N, 21° 35′ W, alt. 200–300 m – on mosses, leg. S. Funder, 16 August 1983.

Bryoria chalybeiformis (L.) Brodo & D.Hawksw. – Amdrup Land, 80° 49′ N, 17° 35′ W – on plant remains together with *Flavocetraria nivalis* and *Hypogymnia subobscura*, leg. B. Fredskild, 25 July 1993; Herlufsholm Strand, 82° 44′ N, 21° 56′ W, alt. 180 m – on soil on mountain slope, leg. P. Mølgaard, 13 July 1978.

Buellia papillata (Sommerf.) Tuck. – Amdrup Land, 80° 49′ N, 17° 35′ W – on mosses together with *Pertusaria bryontha*, leg. B. Fredskild, 25 July 1993; Kap København, 82° 24′ N, 21° 38′ W – over mosses on soil in stony area together with *Lecanora epibryon*, *Megaspora verrucosa* and *Thamnolia vermicularis*, leg. G. Mogensen, 27 July 1983 & over mosses on mineral soil together with *Vulpicida tilesii*, leg. C. Bay, 8 July 1987.

Caloplaca castellana (Räsänen) Poelt – Holm Land, 80° 20′ N, 18° 45′ W – on *Lecidea tesselata* on siliceous stone, leg. B. Fredskild, 23 July 1993.

* *Caloplaca citrina* (Hoffm.) Th.Fr. – Amdrup Land, 80° 49′ N, 17° 35′ W – on old bone together with *Lecidella euphorea*, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on old bone together with *Lecanora hagenii* var. *fallax* and *Lecidella euphorea*, leg. B. Fredskild, 29 July 1993.

Caloplaca tiroliensis Zahlbr. – Kap København, 82° 23′ N, 21° 15′ W, alt c. 100 m – among mosses on sandy soil together with *Megaspora verrucosa*, leg. G. Mogensen, 1 August 1983 & 82° 24′ N, 22° 30′ W – on mosses, leg. S. Funder, 4 August 1983; Brainard Sund, 82° 57′ N, 41° 40′ W – on plant remains, leg. C. Bay, 10 August 1991.

Candelariella aurella (Hoffm.) Zahlbr. – Holm Land, 80° 20′ N, 18° 45′ W – on calcareous crust on siliceous stone, leg. B. Fredskild, 23 July 1993.

Candelariella canadensis H.Magn. – Henrik Krøyer Holme, 80° 42′ N, 13° 50′ W – on mosses together with *Leptogium tenuissimum*, *Ochrolechia alaskana*, *Physconia muscigena* and *Xanthoria subfruticulosa*, leg. C. Bay & B. Fredskild, 30 July 1993.

Candelariella vitellina (Hoffm.) Müll.Arg. – Kap København, 82° 23′ N, 21° 15′ W, alt. c. 100 m – on siliceous stone together with *Xanthoria elegans*, leg. G. Mogensen, 1 August 1983.

Candelariella xanthostigma (Ach.) Lettau – Station Nord, 81° 36´ N, 16° 40´ W – on mosses together with *Cetraria muricata*, *Cetrariella delisei*, *Lecidea ramulosa*, *Megaspora verrucosa*, *Flavocetraria cucullata* and *F. nivalis*, leg. C. Bay, 26 July 1986.

Cetraria muricata (Ach.) Eckfeldt – Station Nord, 81° 36´ N, 16° 40´ W – on mosses, leg. C. Bay, 26 July 1986; Brainard Sund, 82° 57´ N, 41° 40´ W – on plant remains, leg. C. Bay, 10 August 1991.

Cetrariella delisei (Bory ex Schaer.) Kärnefelt & Thell – Station Nord, 81° 36´ N, 16° 40´ W – on soil, leg. C. Bay, 26 July 1986; Kap København, 82° 24´ N, 21° 38´ W, alt. c. 150 m – on soil among boulders, leg. G. Mogensen, 27 July 1983.

* *Cladonia galindezii* Øvst. – Kap København, 82° 24´ N, 22° 30´ W – on soil in *Cassiope tetragona* heath, leg. S. Funder, 4 August 1983 & on soil, leg. C. Bay, 23 July 1987.

Cladonia pocillum (Ach.) Grognot – Holm Land, 80° 20´ N, 18° 45´ W – on silty soil, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49´ N, 17° 39´ W – on soil in snow-patch, leg. B. Fredskild, 25 July 1993; Kap København, 82° 24´ N, 21° 38´ W – among mosses on mineral soil, leg. G. Mogensen, 27 July 1983; Kim Fjelde, 82° 41´ N, 22° 30´ W, alt. 100 m – over mosses on polygone soil, leg. P. Mølgaard, 29 June 1978; Brainard Sund, 82° 57´ N, 41° 40´ W, alt. 350 m – among mosses on soil in snow-patch, leg. C. Bay, 5 August 1991.

Collema substellatum H.Magn. – Kap København, 82° 24´ N, 21° 38´ W – on mineral soil together with *Cladonia pocillum*, leg. G. Mogensen, 27 July 1983; Brainard Sund, 82° 57´ N, 41° 40´ W – on silty soil in fen, leg. C. Bay, 2 August 1991. Since the first report of *Collema substellatum* from Greenland (Hansen, 1993) this disjunct species has been found at many localities in high arctic desert areas in Greenland. It has even been collected on the north coast of Greenland (Hansen, 2009).

Dimelaena oreina (Ach.) Norman – Amdrup Land, 80° 49´ N, 17° 39´ W – on siliceous rock together with *Pseudephebe minuscula* and *Sporastatia testudinea*, leg. B. Fredskild, 22 July 1993.

Flavocetraria cucullata (Bellardi) Kärnefelt & Thell – Station Nord, 81° 36` N, 16° 40´ W – among mosses on soil, leg. C. Bay, 26 July 1987.

Flavocetraria nivalis (L.) Kärnefelt & Thell – Holm Land, 80° 20´ N, 18° 45´ W – on soil, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49` N, 17° 39´ W – among mosses on soil in snow-patch together with *Thamnolia vermicularis*, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57` N, 14° 40´ W – on soil together with *Thamnolia vermicularis*, leg. B. Fredskild, 29 July 1993; Station Nord, 81° 36´ N, 16° 40´ W – among mosses on soil, leg. C. Bay, 26 July 1986 & Knuth Fjeld, 81° 36´ N, 17° 00´ W, alt. 100 m – on soil in ice wedge, leg. P. Mølgaard, 16 June 1978; Kap København, 82° 24` N, 21° 38´ W – on soil among boulders, leg. G. Mogensen, 27 July 1983; Kim Fjelde, 82° 41´ N, 22° 30´ W, alt. 100 m – among mosses on polygon soil, leg. P. Mølgaard, 29 June 1978; Brainard Sund, 82° 57´ N, 41° 40´ W – among mosses on soil, leg. C. Bay, 10 August 1991; Skagen, 83° 06´ N, 24° 33´ W, alt. 160 m – on soil on top of basaltic cliff, leg. P. Mølgaard, 8 July 1978.

Fulgensia bracteata (Hoffm.) Räsänen – Amdrup Land, 80° 49´ N, 17° 39´ W – on mosses together with *Physconia muscigena*, leg. B. Fredskild, 25 July 1993; Station Nord, 81° 36´ N, 16° 40´ W – among mosses on soil, leg. C. Bay, 4 August 1986.

Gowardia nigricans (Ach.) P.Halonen, L.Myllus, S.Velmela & H.Hyvärinen – Kim Fjelde, 82° 31´ N, 21° 35´ W, alt. 200–300 m – over mosses on soil together with *Bryocaulon divergens*, leg. S. Funder, 16 August 1983; Brainard Sund, 82° 57´ N, 41° 40´ W – on plant remains together with *Caloplaca tiroliensis*, *Cetraria muricata*, *Physconia muscigena* and *Rinodina turfacea*, leg. C. Bay, 10 August 1991; Skagen, 83° 06´ N, 24° 33´ W, alt. 160 m – on polygon soil in river bed, leg. P. Mølgaard, 10 July 1978.

Hypogymnia subobscura (Vain.) Poelt – Amdrup Land, 80° 49´ N, 17° 39´ W – on plant remains, leg. B. Fredskild, 25 July 1993.

\# *Immersaria athroocarpa* (Ach.) Rambold & Pietschm. – Qaqortoq/Julianehåb, 60° 43´ N, 46° 05´ W – on thallus of sterile crustaceous lichen, leg. J. Vahl, May 1830 (det. M. Andreev).

Lecanora atromarginata (H.Magn.) Hertel & Rambold – Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on calcareous stone together with *Protoblastenia rupestris*, leg. B. Fredskild, 29 July 1993.

Lecanora epibryon (Ach.) Ach. – Amdrup Land, 80° 49` N, 17° 39´ W – on mosses in snow-patch, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on mosses and soil, leg. B. Fredskild, 29 July 1993; Kap København, 82° 24´

N, 21° 38′ W – over mosses on stony soil, leg. G. Mogensen, 27 July 1983; Kim Fjelde, 82° 41′ N, 22° 30′ W, alt. 100 m – on plant remains and mosses, leg. P. Mølgaard, 29 June 1978.

Lecanora hagenii (Ach.) Ach. var. *fallax* Hepp – Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on old bone, leg. B. Fredskild, 29 July 1993.

Lecanora intricata (Ach.) Ach. – Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on siliceous stone, leg. B. Fredskild, 29 July 1993.

Lecidea auriculata Th.Fr. – Holm Land, 80° 20′ N, 18° 45′ W – on siliceous stone, leg. B. Fredskild, 23 July 1993.

Lecidea ramulosa Th.Fr. – Henrik Krøyer Holme, 80° 42′ N, 13° 50′ W – on mosses, leg. C. Bay & B. Fredskild, 30 July 1993; Station Nord, 81° 36′ N, 16° 40′ W – over mosses on soil, leg. C. Bay, 26 July 1986.

Lecidea tesselata Flörke – Holm Land, 80° 20′ N, 18° 45′ W – on siliceous stone, leg. B. Fredskild, 23 July 1993.

Lecidella bullata Körb. – Amdrup Land, 80° 49′ N, 17° 39′ W – on siliceous stone together with *Rhizocarpon geminatum* and *Xanthoria elegans*, leg. B. Fredskild, 25 July 1993.

Lecidella euphorea (Flörke) Hertel – Amdrup Land, 80° 49′ N, 17° 39′ W – on old bone, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on old bone, leg. B. Fredskild, 29 July 1993.

Lecidella wulfenii (Hepp) Körb. – Kap København, 82° 24′ N, 21° 11′ W – on soil, leg. G. Mogensen, 25 July 1993.

* *Leptogium tenuissimum* (Dicks.) Körb. – Henrik Krøyer Holme, 80° 42′ N, 13° 50′ W – on mosses, leg. C. Bay & B. Fredskild, 30 July 1993.

Megaspora verrucosa (Ach.) Hafellner & V.Wirth – Station Nord, 81° 36′ N, 16° 40′ W – on mosses, leg. C. Bay, 26 July 1986; Kap København, 82° 24′ N, 21° 38′ W – on mosses, leg. G. Mogensen, 27 July 1983 & 82° 23′ N, 21° 15′ W, alt. c. 100 m – among mosses on sandy soil, leg. G. Mogensen, 1 August 1983.

** *Melanelia agnata* (Nyl.) Thell – Narssarssuaq, Kiattuut, 61° 12′ N, 45° 20′ W – on rock in thicket, leg. P. Gelting, 21 September 1953; Neria, head of the fjord, 61° 38′ N, 48° 34′ W, alt. 50 m – on rock, leg. K. Hansen, July 1965 (det. M. Westberg).

\# *Melanelixia subaurifera* (Nyl.) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch – Disko, Qeqertarsuaq/Godhavn, Engelskmandens Havn, 69° 15′ N, 53° 35′ W – on gneissic rock, leg. P. Gelting, 2 July 1950 (det. T. Esslinger).

** *Melanohalea exasperatula* (Nyl.) O.Blanco, Arsuk Fjord, Kungnait, 61° 14′ N, 48° 28′ W – on siliceous rock, leg. E. Dahl, 8 September 1937 (det. T. Esslinger); Disko, Qeqertarsuaqq/Godhavn, Østerdalen, 69° 15′ N, 53° 32′ W – on gneissic rock manured by snow buntings, leg. P. Gelting, 13 September 1949 (det. T. Esslinger).

*** *Miriquidica intrudens* (H.Magn.) Hertel & Rambold – Kangaatsiaq, 68° 19′ N, 53° 27′ W – on thallus of *Rhizocarpon geographicum*, leg. E. S. Hansen, July 1992 (det. B. Owe-Larsson).

Myxobilimbia lobulata (Sommerf.) Hafellner – Kim Fjelde, 82° 45′ N, 22° 08′ W, alt. 350 m – among mosses on solifluction soil in snow-patch on west-facing slope, leg. P. Mølgaard, 24 June 1978.

Ochrolechia frigida (Sw.) Lynge – Henrik Krøyer Holme, 80° 42′ N, 13° 50′ W – on mosses, leg. C. Bay & B. Fredskild, 30 July 1993.

** *Peltigera britannica* (Gyeln.) Holt.-Hartw. & Tønsberg – Narssarssuaq, 61° 09′ N, 45° 25′ W – among mosses in *Salix glauca* thicket, leg. J. Andersen & E. S. Hansen, July 1969.

*** *Peltigera ponojensis* Gyeln. – Disko, Mellemfjord, Sarqardliit silardliit, 69° 47′ N, 54° 44′ W, alt. 5 m – on mosses, leg. P. Gelting, 24 August 1950; Ivnaarssukasik, 70° 08′ N, 53° 08′ W, alt. 15 m – on mosses, leg. P. Gelting, 29 July 1950 (det. O. Vitikainen).

Peltigera rufescens (Weiss) Humb – Holm Land, 80° 20′ N, 18° 45′ W – on mosses, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49′ N, 17° 39′ W – on mosses, leg. B. Fredskild, 25 July 1993; Kim Fjelde, 82° 37′ N, 22° 40′ W, alt. 200 m – on mosses near lemming hole, leg. P. Mølgaard, 1 August 1978 & on mosses in *Cassiope tetragona* heath, leg. P. Mølgaard, 5 August 1978.

* *Pertusaria bryontha* (Ach.) Nyl. – Amdrup Land, 80° 49′ N, 18° 45′ W – on mosses, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on old bone, leg. B. Fredskild, 29 July 1993.

Physcia dubia (Hoffm.) Lettau – Kap København, 82° 24′ N, 21° 38′ W – on manured rock to-

gether with *Xanthoria elegans*, leg. G. Mogensen, 27 July 1983.

Physconia muscigena (Ach.) Poelt – Henrik Krøyer Holme, 80° 42´ N, 13° 50´ W – on mosses on sandy soil, leg. C. Bay & B. Fredskild, 30 July 1993; Amdrup Land, 80° 49´ N, 17° 39´ W – on mosses on soil, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on mosses, leg. B. Fredskild, 22 July 1993; Kap København, 82° 23´ N, 21° 15´ W, alt. c. 100 m – on mosses on mineral soil, leg. G. Mogensen, 1 August 1983 & 82° 28´ N, 21° 14´ W, alt. c. 50 m – among mosses on silty soil, leg. G. Mogensen, 15 August 1983; Brainard Sund, 82° 57´ N, 41° 40´ W – on plant remains, leg. C. Bay, 10 August 1991.

Placidium lachneum (Ach.) de Lesd. – Kap København, 82° 25´ N, 21° 25´ W, alt. 100 m – on sandy soil, leg. G. Mogensen, 6 August 1983.

Placynthium asperellum (Ach.) Trevis. – Amdrup Land, 80° 49´ N, 17° 39´ W – on siliceous stone together with *Sporastatia testudinea*, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on siliceous rock together with *Polysporina simplex*, leg. B. Fredskild, 29 July 1993; Kim Fjelde, 82° 41´ N, 22° 30´ W – on siliceous stone on polygon soil, leg. P. Mølgaard, 29 June 1978.

Polyblastia sakkobanensis Zschacke – Disko, Nordre Laksebugt, 69° 38´ N, 54° 49´ W – on basaltic stone in temporarily moist area together with *Placopsis gelida*, leg. P. Gelting, 22 August 1949 (det. H. Ullrich).

Polysporina simplex (Davies) Vezda – Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on siliceous rock, leg. B. Fredskild, 29 July 1993.

* *Protoblastenia rupestris* (Scop.) J.Steiner – Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on calcareous stone, leg. B. Fredskild, 29 July 1993.

Pseudephebe minuscula (Nyl. ex Arnold) Brodo & D.Hawksw. – Holm Land, 80° 20´ N, 18° 45´ W – on siliceous stones, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49´ N, 17° 39´ W – on siliceous stone, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on siliceous stone, leg. B. Fredskild, 29 July 1993; Kap København, Kochs varde, 82° 29´ N, 21° 06´ W – on siliceous stones, leg. O. Bennike & G. Mogensen, 18 August 1983.

Rhizocarpon geminatum Körb. – Amdrup Land, 80° 49´ N, 17° 39´ W – on siliceous stones, leg. B. Fredskild, 25 July 1993; Kim Fjelde, 82° 41´ N, 22° 30´ W, alt. 100 m – on siliceous stone, leg. P. Mølgaard, 29 June 1978.

Rhizocarpon geographicum (L.) DC. – Holm Land, 80° 20´ N, 18° 45´ W – on siliceous stone together with *Rhizocarpon jemtlandicum* and *Umbilicaria lyngei*, leg. B. Fredskild, 23 July 1993.

Rhizocarpon jemtlandicum (Malme) Malme – Holm Land, 80° 20´ N, 18° 45´ W – on siliceous stone, leg. B. Fredskild, 23 July 1993.

Rhizocarpon pusillum Runemark – Amdrup Land, 80° 49´ N, 17° 39´ W – on *Sporastatia testudinea* on siliceous stone, leg. B. Fredskild, 25 July 1993; Kim Fjelde, 82° 45´ N, 22° 00´ W, alt. 810 m – on siliceous stone, leg. P. Mølgaard, 2 July 1978.

Rinodina mniaraea (Ach.) Körb. – Kap København, 82° 23´ N, 21° 15´ W, alt. c. 100 m – on mineral soil in block field together with *Toninia sedifolia*, leg. G. Mogensen, 1 August 1983.

Rinodina turfacea (Wahlenb.) Körb. – Brainard Sund, 82° 57´ N, 41° 40´ W – on plant remains, leg. C. Bay, 10 August 1991.

Solorina bispora Nyl. – Sophus Müllers Næs, 80° 57´ N, 14° 40´ W – on clayey soil and mosses together with *Lecanora epibryon*, leg. B. Fredskild, 29 July 1993; Kap København, 82° 24´ N, 21° 11´ W – on polygon soil, leg. G. Mogensen, 25 July 1983.

* *Sphaerophorus globosus* (huds.) Vain. – Herlufsholm Strand, 82° 44´ N, 21° 56´ W, alt. 150 m – among mosses on soil on mountain slope, leg. P. Mølgaard, 13 July 1978.

Sporastatia testudinea (Ach.) Massal. – Holm Land, 80° 20´ N, 18° 45´ W – on siliceous stones, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49´ N, 17° 39´ W – on siliceous stones, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57´ N, 41° 40´W – on siliceous stone together with *Lecanora intricata*, leg. B. Fredskild, 29 July 1993; Kim Fjelde, 82° 45´ N, 22° 00´ W, alt. 810 m – on siliceous rock, leg. P. Mølgaard, 2 July 1978.

* *Staurothele drummondii* (Tuck.) Tuck. – Amdrup Land, 80° 49´ N, 17° 39´ W – on siliceous stone, leg. B. Fredskild, 25 July 1993.

Stereocaulon alpinum Laurer – Kim Fjelde, 82° 42´ N, 21° 00´ W, alt. 700 m – on soil, leg. P. Mølgaard, 19 June 1978; Brainard Sund, 82° 57´ N, 41° 40´ W – on plant remains, leg. C. Bay, 10 & 13 August 1991.

Stereocaulon glareosum (Savicz) H.Magn. – Holm Land, 80° 20′ N, 18° 45′ W – on soil, leg. B. Fredskild, 23 July 1993; Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on mosses, leg. B. Fredskild, 29 July 1993; Station Nord, 81° 36′ N, 14° 40′ W – on soil, leg. C. Bay, 18 August 1986; Knuth Fjeld, 81° 36′ N, 17° 00′ W, alt. 50 m – on gravelly soil on old raised beach, leg. P. Mølgaard, 16 June 1978; Kap København, 82° 29′ N, 21° 06′ W – on sandy soil, leg. G. Mogensen, 18 August 1983; Herlufsholm Strand, 82° 44′ N, 21° 56′ W, alt. 150 m – among mosses on mountain slope, leg. P. Mølgaard, 13 July 1978; Kim Fjelde, 82° 45′ N, 22° 00′ W, alt. 800 m – on polygon soil, leg. P. Mølgaard, 2 July 1978; Foldedal, 82° 45′ N, 21° 40′ W, alt. 250 m – on soil, leg. P. Mølgaard, 4 July 1978; Brainard Sund, 82° 57′ N, 41° 40′ W, alt. 350 m – on soil in snow-patch, leg. C. Bay, 5 August 1991.

Thamnolia vermicularis (Sw.) Schaer. – Amdrup Land, 80° 49′ N, 17° 39′ W – on mosses on soil, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on soil, leg. B. Fredskild, 29 July 1993; Station Nord, 81° 36′ N, 16° 40′ W – on soil, leg. C. Bay, 13 August 1986; Kap København, 82° 23′ N, 21° 15′ W, alt. c. 100 m – on mineral soil, leg. G. Mogensen, 1 August 1983 & 82° 24′ N, 21° 38′ W – on polygon soil, leg. G. Mogensen, 27 July 1983; Kim Fjelde, 82° 31′ N, 21° 35′ W, alt. c. 200 m – on soil, leg. S. Funder, 16 August 1983 & 82° 41′ N, 22° 30′ W, alt. 100 m – on soil, leg. P. Mølgaard, 29 June 1978; Brainard Sund, 82° 57′ N, 41° 40′ W – on soil, leg. C. Bay, 13 August 1991.

Toninia sedifolia (Scop.) Timdal – Kap København, 82° 23′ N, 21° 15′ W, alt. c. 100 m – on mineral soil, leg. G. Mogensen, 1 August 1983.

Tremolecia atrata (Ach.) Hertel – Amdrup Land, 80° 49′ N, 17° 39′ W – on siliceous stone, leg. B. Fredskild, 25 July 1993.

Umbilicaria lyngei Schol. – Holm Land, 80° 20′ N, 18° 45′ W – on siliceous stone, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49′ N, 17° 39′ W – on siliceous rock, leg. B. Fredskild, 25 July 1993; Knuth Fjeld, 82° 45′ N, 22° 00′ W – on siliceous stone, leg. P. Mølgaard, 19 August 1978; Kim Fjelde, Foldedal, 82° 45′ N, 21° 40′ W, alt. 800 m – on polygon soil, leg. P. Mølgaard, 3 July 1978.

Vulpicida tilesii (Ach.) J.-E. Mattson & M.-J. Lai – Station Nord, 81° 36′ N, 16° 40′ W – among mosses on soil, leg. C. Bay, 13 August 1986; Kap København, 82° 25′ N, 21° 30′ W – among mosses on mineral soil, leg. C. Bay, 8 July 1987; Kim Fjelde, 82° 41′ N, 22° 30′ W, alt. 100 m – on polygon soil, leg. P. Mølgaard, 29 June 1978.

Xanthoria elegans (Link) Th.Fr. – Holm Land, 80° 20′ N, 18° 45′ W – on siliceous stones, leg. B. Fredskild, 23 July 1993; Amdrup Land, 80° 49′ N, 17° 39′ W – on siliceous stones, leg. B. Fredskild, 25 July 1993; Sophus Müllers Næs, 80° 57′ N, 14° 40′ W – on siliceous stones, leg. B. Fredskild, 29 July 1993; Kap København, 82° 23′ N, 21° 15′ W, alt. c. 100 m – on siliceous stone, leg. G. Mogensen, 1 August 1982 & 82° 24′ N, 21° 38′ W – on manured siliceous stone, leg. G. Mogensen, 27 July 1983.

Xanthoria subfruticulosa (Elenkin) Piin – Eskimonæsset, 80° 31′ N, 16° 04′ W – on mosses, leg. C. Bay, 31 July 1986; Henrik Krøyer Holme, 80° 42′ N, 16° 04′ W – on mosses, leg. C. Bay & B. Fredskild, 30 July 1993; Knuth Fjeld, 81° 36′ N, 17° 00′ W – on soil, leg. C. Bay, 12 August 1986. *Xanthoria subfruticulosa* has a scattered distribution in high arctic parts of Greenland (Hansen, 2002). It grows in somewhat moist depressions and on moist rocks (Øvstedal et al., 2009). The species differs from that of *X. elegans* by its fruticose, bright orange thallus.

Alkaline rocks and soils are widely distributed in high arctic Greenland (Peel & Sønderholm, 1991; Bay, 1997), and accordingly calcicolous lichens and other lichens with a particular preference for substrates rich in nutrients are well represented in the above list. This applies to the following species: *Aspicilia candida*, *Buellia papillata*, *Cladonia pocillum*, *Collema substellatum*, *Fulgensia bracteata*, *Lecanora atromarginata*, *L. epibryon*, *Leptogium tenuissimum*, *Megaspora verrucosa*, *Pertusaria bryontha*, *Protoblastenia rupestris*, *Solorina bispora*, *Toninia sedifolia*, *Vulpicida tilesii* and *Xanthoria subfruticulosa*. Some lichens, for example, *Candelariella vitellina*, *Dimelaena oreina*, *Lecidella bullata*, *Polysporina simplex*, *Rhizocarpon geminatum*, *Sporastatia testudinea* and *Xanthoria elegans*, are restricted to rocks influenced by nutritious dust, musk ox dung or guano. Many lichens are rather indifferent as regards particular nutrients. They grow more or less abundantly in fell-fields with few and scattered phanerogams and are adapted to very different climatic conditions even those prevailing in the polar

desert with low summer temperatures (often below 5°C) and low annual precipitation (Hansen, 1995). Species such as *Bryocaulon divergens*, *Bryoria chalybeiformis*, *Cetraria muricata*, *Flavocetraria nivalis*, *Gowardia nigricans*, *Sphaerophorus globosus*, *Stereocaulon glareosum* and *Thamnolia vermicularis* can be mentioned as examples of such widely distributed fell field lichens. *Brodoa oroarctica*, *Lecanora intricata*, *Lecidea tesselata*, *Pseudephebe minuscula*, *Rhizocarpon geographicum*, *R. jemtlandicum* and *Umbilicaria lyngei* are examples of saxicolous lichens with a wide distribution in Greenland. However, the listed lichens cannot be considered representative for northernmost Greenland, as numerous species are lacking in the material. Lichens such as *Caloplaca erichansenii*, *Catapyrenium daedaleum*, *Diploschistes muscorum*, *Gypsoplaca macrophylla*, *Lecanora geophila*, *Protoblastenia terricola*, *Psora rubiformis*, *P. vallesiaca*, *Phaeorrhiza nimbosa*, *Rinodina calcigena*, *Umbilicaria decussata*, *U. krascheninnikovii* and *U. virginis* are all expected to occur more or less abundantly in the areas visited. For this reason it is not possible to carry out a detailed analysis of the distribution types of the high arctic lichens alone on the basis of the lichens listed about. Just as other lichen collections from northern parts of Greenland, the saxicolous lichens are underrepresented. Accordingly it will be an important and intriguing task for the future botanists to collect all types of lichens in high arctic Greenland. The paper aims to stimulate such lichenological work.

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REFERENCES

Alstrup V., Hansen E.S., Daniels F.J.A., 2000: Lichenized, lichenicolous and other fungi from North and North-East Greenland. – Folia Cryptogamica Estonica, 37: 1–20.

Andersen O.N., Dietz R., 1984: Status over dyre- og plantelivet i Nordgrønland. Teknisk Rapport. – Hellerup.

Bay C., 1992: A phytogeographical study of the vascular plants of northern Greenland – north of 74° northern latitude. – Meddelelser om Grønland. Bioscience, 36: 1–102.

Bay C., 1997: Floristical and ecological characterization of the polar desert zone of Greenland. – Journal of Vegetation Science, 8: 685–696.

Breuss O., Hansen E.S., 1988: The lichen genera *Catapyrenium* and *Placidiopsis* in Greenland. – Plant Systematics and Evolution, 159: 95–105.

Hansen E.S., 1993: *Collema substellatum* and *Fulgensia desertorum*, new to Greenland. – Lichenologist, 25: 451–458.

Hansen E.S., 1995: The lichen flora of the Jørgen Brønlund Fjord area, northern Greenland. – Bibliotheca Lichenologica, 57: 187–198.

Hansen E.S., 2001: Lichens and lichenicolous fungi from Washington Land, western North Greenland. – Folia Cryptogamica Estonica, 38: 1–8.

Hansen E.S., 2002: Lichens from Inglefield Land, N W Greenland. – Willdenowia, 32: 105–125.

Hansen E.S., 2008: A contribution to the lichen flora of Johannes V. Jensen Land, northern Peary Land, North Greenland. – Cryptogamie, Mycologie, 29: 25–33.

Hansen E.S., 2009: Lichens from Johannes V. Jensen Land, N Greenland, the northernmost arctic land area. – Willdenowia, 39: 179–186.

Hansen E.S., 2012: Notes on some new and interesting Greenland lichens XI. – Graphis Scripta, 24: 55–59.

Hansen E.S., Mccune B., 2010: The lichen genus *Hypogymnia* in Greenland. – Folia Cryptogamica Estonica, 47: 13–20.

Hansen E.S., Obermayer W., 1999: Notes on *Arthrorhaphis* and its Lichenicolous Fungi in Greenland. – Bryologist, 102: 104–107.

Hansen E.S., Poelt J., Søchting U., 1987: Die Flechtengattung *Caloplaca* in Grønland. – Meddelelser om Grønland. Bioscience, 25: 1–52.

Holmen K., 1957: The vascular plants of Peary Land, North Greenland. – Meddelelser om Grønland, 124: 1–149.

Jensen B. (ed.), 1999: Grønlands Biodiversitet – et landestudie. Teknisk Rapport, 27. – Nuuk.

Lynge B., 1923: Lichens collected on the north-coast of Greenland by the late Dr. Th. Wulff. – Meddelelser om Grønland, 64: 279–288.

Moberg R., Hansen E.S., 1986: The lichen genus *Physcia* and allied genera in Greenland. – Meddelelser om Grønland. Bioscience, 22: 1–32.

Mølgaard P., 1982: Temperature observations in high arctic plants in relation to microclimate in the vegetation of Peary Land, North Greenland. – Arctic and Alpine Research, 14: 105–115.

Peel J.S., Sønderholm M. (eds), 1991: Sedimentary basins of North Greenland. – Bulletin Grønlands geologiske Undersøgelse, 160: 1–164.

Santesson R., Moberg R., Nordin A., Tønsberg T., Vitikainen O., 2004: Lichen-forming and lichenicolous fungi of Fennoscandia. – Uppsala.

Thomson J.W., 1984: American Arctic lichens. I. The macrolichens. – New York.

Thomson J.W., 1997: American Arctic lichens. II. The microlichens. – Wisconsin.

Timdal E., 1991: A monograph of the genus Toninia (Lecideaceae, Ascomycetes). – Opera Botanica, 110: 1–137.

Øvstedal D., Tønsberg T., Elvebakk A., 2009: The lichen flora of Svalbard. – Sommerfeltia, 33: 1–393.

PASTABOS APIE RETAS IR ĮDOMIAS GRENLANDIJOS KERPES, YPAČ POLIARINIŲ DYKUMŲ TAKSONUS

Eric Steen Hansen

Santrauka

Straipsnyje pateikiamas 73 Grenlandijos kerpių rūšių sąrašas. *Immersaria athroocarpa*, *Melanelixia subaurifera* ir *Polyblastia sakkobanensis* pirmą kartą aptiktos Grenlandijoje. *Melanelia agnata*, *Melanohalea exasperatula* ir *Peltigera britannica* pirmą kartą rastos pietinėje Grenlandijos dalyje, o *Miriquidica intrudens* ir *Peltigera ponojensis* – centrinėje vakarų Grenlandijoje. Patikslintos *Caloplaca citrina*, *Cladonia galindezii*, *Pertusaria bryontha*, *Protoblastenia rupestris*, *Sphaerophorus globosus* ir *Staurothele drummondii* šiaurinio paplitimo ribos šiaurės rytinėje Grenlandijoje. Pateikiamos naujos 59 Grenlandijos kerpių taksonų radimvietės į šiaurę nuo 80° N paralelės.